

REMARKS

A. Background

Claims 1, 3, 5-9, 11 and 12 were pending in the application at the time of the Office Action. Claims 1, 3, 5-9, 11 and 12 were rejected as being anticipated by and/or obvious over cited art. By this response applicant has amended claims 1 and 7; and added new claims 15-23. As such, claims 1, 3, 5-9, 11, 12, and 15-23 are presented for the Examiner's consideration in light of the following remarks.

B. Proposed Claim Amendments

Applicant has herein amended claims 1 and 7 to further clarify, more clearly define, and/or broaden the claimed inventions to expedite receiving a notice of allowance. For example, claims 1 and 7 have been amended to recite that the cap (claim 1) and pipe (claim 7) are each mounted directly outside the portion of the crucible having the seed crystal and are separated from a crucible support member.

Applicant has also herein added new claims 15-23. Applicant notes that new claims 15 and 16 correspond to original claims 4 and 10, which were canceled in an earlier paper.

The new claims and the amendments to the pending claims are supported in the application at least by prior pending claim language and Figures 2A, 2B, 6, 7, and 9 and paragraphs [0028] and [0044] of the application. In view of the foregoing discussion, applicant submits that the amendments to the claims do not introduce new matter and entry thereof is respectfully requested.

C. Foreign Language Reference

As a preliminary matter, Applicant notes that the outstanding Office Action has relied on a Japanese language reference (Japanese Publication No. JP 05-024965 to Shibata et al. [*"Shibata"*]) in rejecting all of the pending claims. However, an English translation has been published only of the title and abstract of this Japanese reference. Applicant further notes that the Office Action has failed to provide a full-text English translation of the underlying document.

As stated in the MPEP, "[c]itation of and reliance upon an abstract without citation of and reliance upon the underlying scientific document is generally inappropriate where both the abstract and the underlying document are prior art. ... If the document is in a language other than

English and the examiner seeks to rely on that document, a translation must be obtained so that the record is clear as to the precise facts the examiner is relying upon in support of the rejection.” MPEP § 706.02(II), *emphasis added*.

The MPEP carves out an exception to this, stating that in limited circumstances the examiner may make a rejection in an Office Action based on the English language abstract only without relying on the rest of the reference. However, when doing so, “the evidence relied upon is the facts contained in the abstract, not additional facts that may be contained in the underlying full text document.” *id.* Accordingly, Regarding *Shibata*, Applicant only refers herein to the facts given in the Abstract to respond to rejections set forth in the current Office Action. Applicant requests that an English translation of the full text document of *Shibata* be supplied by the Examiner should the Examiner elect to rely on *Shibata* for more than that which is disclosed in the abstract thereof.

D. Rejection based on 35 U.S.C. § 102

Paragraphs 2 and 3 of the Office Action reject claims 1, 6-8 and 12 under 35 U.S.C. § 102(b) as being anticipated by *Shibata*. Applicant respectfully traverses this rejection and submits that in view of amendments made herein, *Shibata* does not anticipate claims 1, 6-8 and 12 at least because *Shibata* does not include each and every claim limitation recited in the rejected claims. Of the rejected claims, claims 1 and 7 are independent claims.

As disclosed in the abstract, *Shibata* is directed to a method and apparatus for producing a crystal. The *Shibata* apparatus includes a crucible 3 having a lower portion 3a in which a seed crystal is disposed, and an upper portion housing a semiconductor melt 7. The apparatus also includes a crucible supporting base 4 that is used to support the crucible 3 from below (see the Figure accompanying the abstract). The crucible supporting base 4 is disclosed as biasing against crucible 3 at the lower portion 3a, as well as a bottom portion of the upper portion of crucible 3. Embedded within the crucible supporting base 4 is a cooling water path 11, which the Examiner appears to equate to the claimed “cap” of claim 1 and the claimed “pipe” of claim 7. The water path 11 is positioned within crucible supporting base 4 so as to encircle lower portion 3a of crucible 3. *Shibata* discloses that water is passed through this path 11 during the growth of the crystal.

In light of the above, because the cooling water path 11 is disposed within the crucible supporting base 4, applicant submits that *Shibata* does not teach or suggest “a hollow constructed cap mounted directly outside the portion of the crucible where the seed crystal is placed, the cap being separated from a crucible support member,” as recited in amended claim 1, or “a helical pipe mounted directly outside the portion of the crucible where the seed crystal is placed, the pipe being separated from a crucible support member,” as recited in amended claim 7. Accordingly, Applicant respectfully requests that the anticipation rejection with respect to claims 1 and 7 be withdrawn.

Applicant submits that the added limitations to claims 1 and 7 are not arbitrary design choices but provide unique benefits to the claimed invention. By being mounted so as to be separated from the crucible support member, the temperature controlling means of the presently claimed invention can perform the controlling or heating so that only the local area about the seed crystal is affected. For example, as disclosed at Figures 7 and 8 and paragraphs [0030] and [0039], the temperature gradients in the vicinity of the seed crystal can be maintained at a different value than the temperature gradients of the other portions of the crucible. In contrast, because the water path 11 in *Shibata* is embedded within a crucible supporting base 4 that supports a large portion of the crucible 3, cooling of the other portions of the *Shibata* crucible 3 will also take place when the portion of the crucible 3a containing the seed crystal is cooled. This can cause problems with temperature maintenance, as discussed in the present application. See, e.g., paragraph [0012]. Mounting the temperature controlling means so as to be separated from the crucible support member helps to solve this problem.

Claims 6, 8 and 12 depend from claims 1 and 7 and thus incorporate the limitations thereof. As such, applicant submits that claims 6, 8 and 12 are distinguished over the cited art for at least the same reasons as discussed above with regard to claims 1 and 7. Accordingly, Applicant respectfully requests that the anticipation rejection with respect to claims 6, 8 and 12 also be withdrawn.

E. Rejection based on 35 U.S.C. § 103

Paragraphs 4-6 of the Office Action reject claims 3, 5, and 11 under 35 U.S.C. § 103(a) as being obvious over *Shibata* in view of U.S. Patent No. 6,740,160 to Kubo et al. (“*Kubo*”). *Kubo* is merely cited for allegedly apparently teaching multiple cooling caps or pipes and

independently regulating refrigerant flow within those caps or pipes. Applicant respectfully traverses this rejection and submits that a *prima facie* case of obviousness has not been established at least because the allegedly obvious combinations would not include all of the limitations recited in the rejected claims.

Claims 3, 5 and 11 depend from claims 1 and 7 and thus incorporate the limitations thereof. As such, even if, *arguendo*, it would have been obvious to combine *Shibata* and *Kubo* in the allegedly obvious manner set forth in the Office Action, the resulting combination would still not cure the deficiencies of *Shibata* with regard to claims 1 and 7. As such, applicant submits that claims 3, 5 and 11 are distinguished over the cited art for at least the same reasons as discussed above with regard to claims 1 and 7. Accordingly, Applicant respectfully requests that the obviousness rejection with respect to claims 3, 5 and 11 be withdrawn.

No other objections or rejections are set forth in the Office Action.

G. New Claims

Applicant submits that new claims 15-23 are distinguished over the cited art of record for substantially the same reasons as discussed above. For example, new independent claim 17 recites “a crucible support member on which the crucible rests; and temperature controlling means ... comprising: a refrigerant flow element positioned adjacent to the lower portion of the crucible, the refrigerant flow element configured to allow a refrigerant to flow therethrough, the refrigerant flow element being physically separated from the crucible support member.” Applicant submits that none of the cited art, individually or combined, teaches or suggests these limitations in conjunction with the other limitations recited in new claim 17.

In addition, claims 15, 16, and 18-23 depend from claims 1, 7, and 17 and thus incorporate the limitations thereof. As such, applicant submits that claims 15, 16, and 18-23 are distinguished over the cited art for at least the same reasons as discussed above with regard to claims 1, 7, and 17.

G. Conclusion

Applicant notes that this response does not discuss every reason why the claims of the present application are distinguished over the cited art. Most notably, applicant submits that many if not all of the dependent claims are independently distinguishable over the cited art.

Applicant has merely submitted those arguments which it considers sufficient to clearly distinguish the claims over the cited art.

In view of the foregoing, applicant respectfully requests the Examiner's reconsideration and allowance of claims 1, 3, 5-9, 11, 12, and 15-23 as amended and presented herein.

The Commissioner is hereby authorized to charge payment of any of the following fees that may be applicable to this communication, or credit any overpayment, to Deposit Account No. 23-3178: (1) any filing fees required under 37 CFR § 1.16; (2) any patent application and reexamination processing fees under 37 CFR § 1.17; and/or (3) any post issuance fees under 37 CFR § 1.20. In addition, if any additional extension of time is required, which has not otherwise been requested, please consider this a petition therefor and charge any additional fees that may be required to Deposit Account No. 23-3178.

In the event there remains any impediment to allowance of the claims which could be clarified in a telephonic interview, the Examiner is respectfully requested to initiate such an interview with the undersigned.

Dated this 15th day of October 2009.

Respectfully submitted,

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